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U.S. weighs lowering acceptable lead level in children

By Bill Lambrecht
Post-Dispatch Washington Bureau

WASHINGTON - The nation has drastically cut lead poisoning in youngsters, but research now suggests many more children may be at risk.

The government estimates that some 900,000 children in the United States are poisoned by lead. But what if the real number was many times that?

Researchers believe that it may be, and new studies weighing the evidence could have a major impact on the campaign to end childhood lead poisoning.

Two panels -- a Health and Human Services Department advisory group and the National Academy of Sciences -- will begin this fall to examine research concluding that even tiny amounts of lead drain children's intelligence.

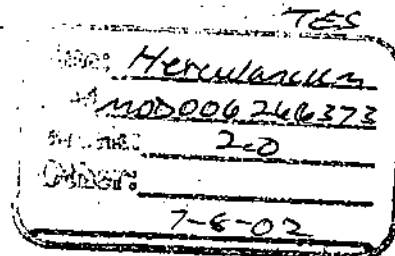
They will make recommendations on whether the Centers for Disease Control and Prevention ought to lower the "acceptable" concentration of lead in children's blood that was set in 1991.

Dr. Richard Jackson, director of the CDC's National Center for Environmental Health, predicts that the standard will be lowered.

"I think that the (HHS) scientific panel will say the evidence supports it, and we (the CDC) would go along with what they say. That's usually what we do," Jackson said in an interview.

The scientific reviews could take a year or more. A change would alter the specter of lead poisoning in America and complicate the nation's goal of ending childhood lead poisoning by 2010.

The current CDC standard is 10 micrograms of lead per deciliter of blood for children and adolescents. That translates to just 10 millionths of a gram of lead in one-tenth of a liter of fluid.



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Yet concentrations of lead even more minuscule disrupt the workings of the brain and nervous system so as to impair children's ability to think, to concentrate and to learn, research shows.

A shift downward in the threshold to 5 micrograms of lead per deciliter of blood - the level some researchers suggest - would add millions more children to the category considered at risk.

For instance, Missouri last year identified 3,759 children above the current danger threshold, based on tests of 15 percent of the state's children.

But if the lead standard were cut in half, Missouri would have registered 22,608 children above the danger threshold, according to the Missouri's Department of Health and Senior Services.

"The next leap forward"

The change, if it happens, could have broad ramifications in fighting lead poisoning - depending on the guidance from the government about follow-up actions to take.

Physicians and health departments would find themselves counseling many more parents about their child's health while working harder to track down the sources of problems.

"It would be challenging because there is a limited amount of money to do these things," said Susan Thomas, coordinator of Missouri's childhood lead poisoning prevention program.

Meanwhile, federal agencies would face new pressure to force urban landlords to remove lead paint from old properties and rein in pollution from operators of lead smelters. Since 1978, the Environmental Protection Agency's air-lead standard has remained at 1.5 deciliters per cubic meter of air (averaged quarterly).

Dr. David Bellinger of Boston Children's Hospital and the Harvard Medical School said a lowered standard might enable the country "to make the next leap forward in terms of resources" to combat childhood lead poisoning.

He added: "But it would be a messy business and provoke an outcry."

The research of Dr. Bruce Lanphear of Cincinnati Children's Hospital helped to trigger the reviews. He observed that such an outcry might be necessary to counter the illusion that the fight against lead poisoning in children is largely won.

"There are a number of reasons why you can say this is a public health crisis. But for some reason, many politicians and the public health system have abandoned this fight, perhaps because they think this is a battle of the past," he said.

Public health success

The dimensions of today's problem are a far cry from the 1970s,

when a remarkable 88 percent of American children under 5 had blood-lead concentrations higher than what is considered acceptable today.

Since then, regulatory crackdowns have removed lead from gasoline, paint and metal food containers, producing one of the country's major environmental health successes of the last half-century.

In 25 years, the percentage of children under 5 with unhealthy levels of lead in their bodies by the government's standard has dropped from 88 percent to the very low single digits, according to the CDC.

Yet advocates for children stress that more needs to be done to eradicate a preventable affliction. For most of the 20th century, that belief was not widely shared.

Until the 1960s, much of the nation's research into the hazards of lead came from laboratories friendly to industry and from a single scientist, Robert Kehoe.

Kehoe, a college professor as well as an employee of the Ethyl Gasoline Corp., argued that small amounts of lead occur naturally in human tissue and that the body had a built-in mechanism to protect itself.

"The situation is in no sense urgent," Kehoe, who has since died, told Congress in 1966 during Senate hearings examining proposals to ban lead in gasoline.

Kehoe's theories began to unravel during those same hearings with the airing of research by another scientist, Clair Patterson. Analyzing 1,600-year-old Indian bones, Patterson found concentrations of lead 500 times less than in modern humans.

Children are most at risk

In the years that followed, the evidence of lead's dangers swiftly reached critical mass.

Lead has no known beneficial use in the body. In high concentrations, lead harms the blood, kidneys and the central nervous system and can cause anemia, kidney damage and even brain damage. In adults, lead has been blamed for high blood pressure and heart disease.

But children are the most susceptible because their bodies absorb roughly four times more contamination than adult bodies do.

Dr. Herbert Needleman provided pivotal evidence by analyzing teeth that children in the Boston area had brought to class at the request of their teachers.

When Needleman and his colleagues matched the results with the pupils, they found that children with elevated lead in their systems had lower I.Q. scores, difficulties with language skills and behavioral problems.

Allowable levels

Responding to the evidence, the CDC lowered the allowable lead level in children four times in two decades. In 1971, it was dropped to 40 micrograms of lead per deciliter of blood from 60; in 1978, it went to 30. In 1985 it was further reduced to 25 and in 1991 it came down to 10, where it has remained.

The CDC observed in 1991 that there was no known threshold at which lead doesn't cause harm. The evidence for that conclusion has continued to grow.

In Boston, Dr. David Bellinger and his colleagues studied 200 children for 10 years after finding elevated levels of lead in the blood of their umbilical cords. Most of the children had levels below today's national standard yet scored lower on I.Q. tests and had trouble with reading and math.

In the lead-smelting town of Port Pirie, Australia, research that began in 1979 studied children from birth until their early teens. In 1992, scientists associated minuscule amounts of lead with learning problems. They concluded that exposure to lead did the most harm in children between the ages of 15 months and four years.

In still another study, published in 2000, Lanphear and colleagues compared blood-lead concentrations of nearly 5,000 children ages 6 to 16 from across the country with their performance on tests in arithmetic, reading and short-term memory.

They found lead concentrations higher in African-Americans than the population in general and higher in boys than in girls. And they showed that children with blood-lead concentrations even lower than 5 micrograms of lead per deciliter of blood have intelligence deficits.

In his research involving children with 10 micrograms or less, Lanphear tabulated that for every 1 microgram of lead in a deciliter of a child's blood, reading scores declined by 1 point on standardized tests. Arithmetic scores were lower by .7 of a point for each microgram of lead and memory tests one-half point under average scores.

After Lanphear's work circulated in Washington last year, Sen. Jean Carnahan, D-Mo., and a small group of senators started pushing Health and Human Services Secretary Tommy Thompson to lower the present threshold.

Carnahan recalled that she joined the effort because of problems among St. Louis children living in old homes laden with lead paint. Since then, the breadth of lead poisoning among children in **Herculaneum** has become known.

"What we have seen recently really strengthens our resolve to do something. This is a rural issue as well as an urban issue," Carnahan said.

Science vs. policy

While political leaders speak of the need for "good science," scientists themselves often base policy decisions on other

considerations.

In 1991, recalled CDC director Dr. Richard Jackson, 10 micrograms was chosen partly because many laboratories couldn't test for lower lead levels. He added: "In many ways, it was like a speed limit. You pick a number that people can understand."

Dr. Tom Matte, an epidemiologist in CDC's lead poisoning prevention program, summed up a concern in setting health policy of any sort: "There's a difference between saying that something may not be good for your health and saying that there is something we can do to make that problem better."

On both sides of the issue, experts will be weighing powerful perceptions, among them the prospect of the nation suddenly finding it has many more poisoned children.

A sudden spotlight on children with minimal poison levels might detract not just from more serious cases but from the notion that Americans are on the verge of conquering a problem.

"I'll be very direct," the CDC's Jackson replied at a Senate hearing last month when asked about the wisdom of lowering the standard. "I don't want to see attention pulled away from children who need it in high-risk areas."

On the other hand, advocates for children believe a standard that reflects the true damage from lead might spur efforts to cure lead poisoning once and for all, as the government vowed in 1991.

For instance, the broader awareness of problems might generate more support in Congress for passing a tax break that would help property owners remove lead paint from an estimated 41 million homes where it remains.

Experts on the Health and Human Services Advisory Committee on Childhood Lead Poisoning Prevention will give their advice first; the National Academy of Sciences is awaiting \$600,000 from Congress for a study of wider scope.

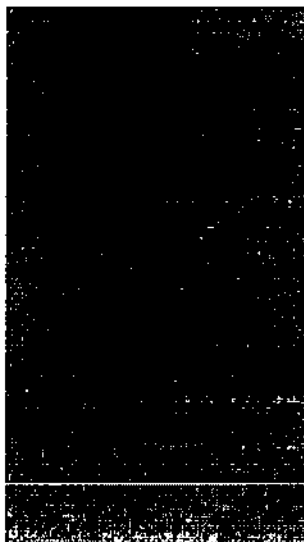
Dr. Carla Campbell of Children's Hospital of Philadelphia, the acting chairwoman of the Health and Human Services panel, said a work group to be named in October would conduct "a careful and critical review" of what is known about low-level lead problems.

Another member of that committee, Dr. Michael Shannon of Children's Hospital in Boston, said "a bit more data" was needed to reach conclusions because of the importance of the decision.

"The main implication is the number of children that you define as having concerned levels of lead. It goes up astronomically. It would certainly put an onus on health professionals, and a bigger onus on policymakers," he said.

Lanphear, who balances his role as a researcher with his advocacy for children, said he did not want children stigmatized as being poisoned as a result of lowering the level.

"That is not the intent. The intent is to give people a sense of the magnitude of the problem so that we can become more aggressive in removing lead exposure, whether that be in paint in old homes or dust from smelters. If making these changes



requires a lower standard, then yes, we can do it," he said.

REDUCING LEAD POISONING | 25 YEARS OF SUCCESS \Reporter
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